

REMARKS

Claims 22 to 36 are pending. Claims 1 to 21 were previously canceled, and claim 32 is hereby cancelled. Claim 31 is amended.

In fulfillment of Applicant's obligation under 37 CFR 1.56, Applicant hereby asserts that the subject matter of all of the claims of the present application was commonly owned, assigned, or under a duty of common assignment at the time the invention was made.

Summary of Rejections

The Examiner's November 30, 2005 rejection was made in view of the BPAI's July 27, 2005 decision, which affirmed the Examiner's rejection of claims 31, 33, 34, and 36 and reversed the Examiner's rejection of claims 22-30, 32, and 35. The Examiner reaffirms the BPAI's rejection of claims 31, 33, 34, and 36 and submits new prior art references (JP 042096876 and JP 08157793) to support the Examiner's assertion that "acrylic adhesives are by nature pressure-sensitive" (page 2).

Applicant disagrees with the Examiner's assertions that (1) "acrylic based epoxy adhesives are by nature pressure sensitive" (page 2) and (2) "one of ordinary skill in the art at the time the invention was made would have readily appreciated that acrylic based epoxy adhesives such as that taught by Chau et al. as modified by Stamm are pressure-sensitive as evidenced by either one of JP 042096876 or JP 08157793" (page 4). Acrylic based epoxy resins are not inherently or necessarily pressure-sensitive adhesives¹. In fact, many, if not most, acrylic based epoxy resins do not have pressure-sensitive adhesive properties, as evidenced by the fact that acrylic based epoxy resins are commonly used as varnishes, structural adhesives, mar resistant coatings, and release agents.

¹ Pressure-sensitive adhesives are typically tacky at room temperature and they adhere to a surface upon contact to the surface without the need for more than finger or hand pressure. Pressure-sensitive adhesives can be identified by the Dahlquist criteria described in the *Handbook of Pressure Sensitive Adhesive Technology*, D. Satas, 2nd ed. Page 172 (1989). This criterion defines a good pressure-sensitive adhesive as one having a 1 second creep compliance of greater than 1×10^{-10} cm/dyne. Alternatively, since modulus is, to a first approximation, the inverse of compliance, pressure sensitive adhesives may be defined as adhesives having a modulus of less than 1×10^9 dynes/cm.

The attached journal article entitled *New Coating Materials Prepared by Radiation-Induced Polymerization* supports this assertion by showing several graphs of the viscoelastic characteristics of various acrylic based epoxy resins. These graphs show acrylic based epoxy resins that have a modulus (and Tg) that would not provide pressure-sensitive adhesive properties. At least one reason why many, if not most, acrylic based epoxy resins do not have pressure-sensitive adhesive properties is that forming a pressure-sensitive acrylic based epoxy resin requires careful selection of many variables. One such variable is the type and amount of the other monomers in the composition. Another variable is the way the monomers are polymerized and as a result the way the polymer backbone is structured, e.g., block vs. random copolymer. For example, if an acrylic based epoxy is polymerized via cationic ionization, a pressure sensitive adhesive will not be formed. Another variable is the way the monomers are cured. Further, in a pressure-sensitive adhesive that includes an acrylic based epoxy, the acrylic based epoxy is a minor portion of the total composition while the other monomers form the major portion of the composition.

For the reasons described above, acrylic based epoxy resins are not inherently or necessarily pressure-sensitive adhesives. Further, one of ordinary skill in the art at the time the invention was made would not have readily appreciated that the acrylic based epoxy taught by Chau et al. as modified by Stamm has pressure-sensitive properties. Applicant also asserts that the mere mention of an acrylic based epoxy resin in Chau et al. with no mention of such a resin having pressure-sensitive adhesive properties does not constitute a teaching of an acrylic based epoxy resin having pressure-sensitive adhesive properties. Nothing in Chau et al. states or suggests that the acrylic based epoxy should be one of the ingredients in a composition that has pressure-sensitive adhesive properties.

§ 103 Rejections

1. Claims 31, 33, 34, and 36

Claims 31, 33, 34, and 36 stand rejected under 35 USC § 103(a) as being unpatentable over U.S. Patent No. 5,735,988 to Chau et al. in view of U.S. Patent No. 3,712,706 to Stamm as per the July 27, 2005 BPAI decision affirming the Examiner's rejection of these claims.

Applicant amended independent claim 31 to include a claim element from dependent claim 32, for which the BPAI reversed the Examiner's rejection. Amended claim 31 recites "wherein the composition is suitable for forming a transparent pressure-sensitive adhesive." As will be described in greater detail below, applicant believes that the amended claim overcomes the Examiner's rejection. Because claims 33, 34, and 36 each add additional features to claim 31, applicant believes that these claims are likewise patentable. Applicant thereby believes that the rejection of claims 31, 33, 34, and 36 under 35 USC § 103(a) as being unpatentable over Chau et al. in view of Stamm has been overcome and should be withdrawn.

2. Claims 22-25, 28-30, 32, and 35

Claims 22-25, 28-30, 32, and 35 stand rejected under 35 USC § 103(a) as being unpatentable over Chau et al. and Stamm and further in view of either one of JP 042096876 or JP 08157793.

Regarding claims 22-25, 28-30, 32, and 35, independent claims 22 recites "applying to the structured surface a flowable composition suitable for forming a transparent pressure-sensitive adhesive," and independent claim 31 recites "applying to the structures surface a radiation-curable composition suitable for bonding to the film of reflective material, wherein the composition is suitable for forming a transparent pressure-sensitive adhesive." The Examiner previously admitted that neither Chau et al. nor Stamm describes a transparent pressure-sensitive adhesive. However, the Examiner pointed to the statement in Chau et al. that the "index matching fluid can be an acrylic based epoxy," (col. 6, lines 9-10) and asserted that acrylic based epoxies are inherently pressure-sensitive adhesives, as shown by Rowland. The Board of Patent Appeals and Interferences rejected the Examiner's argument, stating that "nothing in Rowland referred to by the examiner teaches that the UV curable resin taught by Chau has pressure-sensitive adhesive properties or that its pressure-sensitive adhesive is radiation or UV curable" (July 27, 2005 Decision on Appeal, page 8).

In the present rejection, the Examiner admits that neither Chau et al. nor Stamm describes a pressure-sensitive acrylic based epoxy adhesive (pages 3-4). However, the Examiner asserts that "one of ordinary skill in the art at the time the invention was made would have readily appreciated that acrylic based epoxy adhesives such as that taught by Chau et al. as modified by

Stamm are pressure-sensitive as evidenced by either one of JP 042096876 or JP 08157793” (page 4). Thus the Examiner is reasserting his previous argument that the UV curable transparent acrylic resin taught by Chau et al. necessarily or inherently has pressure-sensitive adhesive properties and uses JP 042096876 or JP 08157793 to support this assertion.

First, as described above, applicant asserts that acrylic based epoxy adhesives are not inherently or necessarily pressure sensitive adhesives.

Second, Applicant respectfully submits that the Examiner has not made a prima facie case of obviousness because there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine Chau et al. with the teaching of either of JP 042096876 or JP 08157793, and the Examiner does not provide any motivation to do so. Chau et al. states that the “index matching fluid can be an acrylic based epoxy,” (col. 6, lines 9-10). JP042096876 and/or JP 08157793 show that some specific types of acrylic based epoxies are pressure-sensitive adhesives. However, Chau et al. never suggests that the matching fluid should have adhesive or pressure-sensitive adhesive properties. Chau et al. only states that the matching fluid “can be any material that is at least partially transmissive” and “[i]t is preferred that the index matching fluid be a UV curable fluid” (col. 6, lines 8-9 and lines 12-13). Nothing in Chau et al. would suggest to one of ordinary skill in the art to use a very specific type of acrylic based epoxy that has pressure-sensitive adhesive properties.

Further, one of ordinary skill in the art would not look to either JP042096876 or JP 08157793 to combine with Chau et al. because neither of the cited Japanese references describe a UV-curable acrylic based epoxy, and Chau et al. states that “[i]t is preferred that the index matching fluid be a UV curable fluid” (col. 6, lines 12-13). JP08157793 describes an epoxy denatured acryl based tacky agent that is thermally cured (Abstract). JP04209686 describes the use of a thermosetting pressure-sensitive adhesive (Abstract). Because neither of the resins described in the cited Japanese references satisfy the preferences clearly expressed in Chau et al., one of ordinary skill in the art would not be motivated to combine the teachings of either reference with the teachings of Chau et al. in view of Stamm.

Additionally, JP08157793 describes a nonwoven fabric that has been impregnated with an epoxy denatured acryl based tacky agent. The epoxy denatured acryl based tacky agent can be thermally cured. When the thermally cured tacky tape is heated and cured, “the curing catalyst is

partially decomposed and turned to gas, causing the tape to swell. As a result, as shown in Figure 2(c), the roof molding is transferred upward, and a gap is generated between the molding and the automobile body" (paragraph [0006] of attached translation). This gap may be advantageous in the unrelated field of automobiles, but it would not be advantageous in the field of Chau et al. (liquid crystal display systems) or in the field of the present application (cube corner articles). As such, one of ordinary skill in the art would not be motivated to combine the teachings of JP08157793 with the teachings of Chau et al. in view of Stamm.

Regarding claims 28 and 29, the Examiner admits that neither Chau et al. nor Stamm describe incompletely filling the cube corner cavities with adhesive (page 4). However, the Examiner asserts that "one of ordinary skill in the art at the time the invention was made would have readily appreciated that when applying the adhesive to the structured surface taught by Chau et al. as modified by Stamm some air would remain trapped and the cavities would be incompletely filled resulting in a later settling of the adhesive" (page 4).

Claims 28 and 29 each add a limitation to independent claim 22. Applicant believes that independent claim 22 is patentable for the reasons given above. Applicant relies on the patentability of independent claim 22 to support the patentability of dependent claims 28 and 29.

Regarding claim 30, the Examiner admits that neither Chau et al. nor Stamm describe "the degree the radiation curable adhesive is cured/crosslinked prior to its application to the structured surface" (page 4). However, the Examiner asserts that "one of ordinary skill in the art at the time the invention was made would have readily appreciated that an adhesive crosslinked to a higher degree prior to its application would reduce the processing/cure time required after its application and thus, improve production efficiency as it would apply to the radiation curable adhesive taught by Chau et al. as modified by Stamm" (page 4).

Claim 30 adds a limitation to independent claim 22. Applicant believes that independent claim 22 is patentable for the reasons given above. Applicant relies on the patentability of independent claim 22 to support the patentability of dependent claim 30.

3. Claims 26 and 27

Claims 26 and 27 stand rejected under 35 USC § 103(a) as being unpatentable over Chau et al. and Stamm and further in view of either one of JP 042096876 or JP 08157793 and further in view of U.S. Patent No. 3,810,804 to Rowland. The Examiner admits that none of Chau et al., Stamm, JP 042096876, and JP 08157793 describe "using a releasable liner as the substrate" (page 5). However, the Examiner asserts that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to use as the substrate taught by Chau et al. as modified by Stamm and either one of JP 042096876 or JP 08157793 a releasable liner as suggested by Rowland as it was conventional in the art to form the retroreflective article on a releasable liner substrate when the retroreflective article is not permanently mounted during its production such that it may be applied later to a final substrate" (page 5).

Claims 26 and 27 each add additional features to independent claim 22. Claim 22 is patentable for the reasons given above. Thus claims 26 and 27 are likewise patentable. Applicant relies on the patentability of independent claim 22 to support the patentability of dependent claims 26 and 27.

The rejection of claims 22-36 under 35 USC § 103(a) as being unpatentable over a combination of Chau et al. and Stamm and either one of JP 042096876 or JP 08157793 and Rowland has been overcome and should be withdrawn.

In view of the above, it is submitted that the application is in condition for allowance. Reconsideration of the application is requested.

Respectfully submitted,

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Date

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